

REMARKS

In the Final Office Action, the Examiner:

- a) objected to claim 20 under 37 C.F.R. 1.75(c) as being in improper form;
- b) rejected claims 1, 5, 15, and 20 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement;
- c) rejected claims 1-5, 9, 10, 16, and 20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,282,106 to Grass ("*Grass*") in view of U.S. Patent Publication No. 2002/0170817 to Goudy ("*Goudy*");
- d) rejected claims 1-3 and 13 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,233,039 to Schmidt ("*Schmidt*") in view of *Goudy*;
- e) rejected claims 11 and 12 under 35 U.S.C. § 103(a) as being unpatentable over *Grass* and *Goudy*, further in view of U.S. Patent No. 2,838,737 to Duncan ("*Duncan*");
- f) rejected claims 7 and 8 under 35 U.S.C. § 103(a) as being unpatentable over *Grass* and *Goudy*, further in view of British Patent Publication No. GB2014899 to Galimberti ("*Galimberti*");
- g) rejected claim 13 under 35 U.S.C. § 103(a) as being unpatentable over *Grass* and *Goudy*, further in view of U.S. Patent No. 4,541,848 to Masuda ("*Masuda*");
- h) rejected claim 14 under 35 U.S.C. § 103(a) as being unpatentable over *Schmidt* and *Goudy*, further in view of *Grass*;
- i) rejected claims 6 and 17 under 35 U.S.C. § 103(a) as being unpatentable over *Grass* and *Goudy* or *Schmidt* and *Goudy*, in view of JP 2001-170441 to Inomata ("*Inomata*"); and
- j) rejected claims 15, 18, and 19 under 35 U.S.C. § 103(a) as being unpatentable over *Goudy* in view of *Grass* or *Schmidt*.

By this Amendment, Applicant proposes to amend claims 15, 19, and 20.

Support for the amendments can be found in Applicant's specification at, for example, pages 4-7 and in the drawings as originally filed.

Response to Claim Objection

Applicant proposes to amend claim 20 to address the Examiner's objection and therefore respectfully requests withdrawal of the objection to claim 20 under 37 C.F.R. 1.75(c).

Response to Claim Rejection under 35 U.S.C. § 112

Applicant respectfully traverses the rejection of claims 1, 5, 15, and 20 under 25 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Nevertheless, in order to expedite prosecution, Applicant proposes to amend claim 20 to address the Examiner's rejection with respect to the "punched-out spaces" element recited in claim 20.

With respect to the element of "positive DC voltage component" recited in claims 1, 5, 15, and 20, Applicant first directs the Examiner's attention to Figure 3, in which an example of the discharge voltage waveform applied to the discharge electrode is depicted. Figure 3 depicts "a positive DC high voltage component" (element 9) with "a superposed AC high voltage component" (element 10). Figure 3 clearly shows that DC component 9 has a positive voltage. In addition, the specification recites, for example, "[s]ince the AC voltage signal is superposed on a DC voltage signal, the element 5 having diode functionality, in combination with the LR-circuit 6, ensures that a voltage signal having the waveform that is shown in the right-hand detail view and in Fig. 3 is applied to the discharge electrode 3." See specification, p. 4, ll. 14-18.

Furthermore, Figures 1, 2, and 4-14 further depict a waveform diagram showing "a positive DC high voltage component comprising a superposed AC high voltage component" is delivered to a discharge electrode (element 3). Figures 1, 2, and 4-14 further depict element 5 comprising a diode (Figures 1, 4, 6, and 7) or a bridge rectifier (Figures 2, 5, and 8-14) connected to LR circuit 6. Upon reading the specification and the drawings, one skilled in the art would recognize that the functions of these basic electrical components and the circuit structure as depicted in Figures 1, 2, and 4-14 ensure that "a positive DC high voltage component comprising a superposed AC high voltage component" as exemplified in Figure 3 is delivered to the discharge electrode. Therefore, the element of "positive DC voltage component" recited in claims 1, 5, 15,

and 20 satisfy the written description requirement set forth under 35 U.S.C. § 112, first paragraph.

For at least these reasons, Applicant respectfully requests withdrawal of the rejection of claims 1, 5, 15, and 20 under 35 U.S.C. § 112, first paragraph.

Response to Rejection Under 35 U.S.C. § 103

Applicant respectfully traverses the rejection of claim 1 under 35 U.S.C. §103 as being obvious from *Grass* in view of *Goudy*. A *prima facie* case of obviousness has not been established.

“The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. . . . [R]ejections on obviousness cannot be sustained with mere conclusory statements.” *M.P.E.P.* § 2142, 8th Ed., Rev. 7 (July 2008)(*internal citation and inner quotation omitted*). “[T]he framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). . . . The factual inquiries . . . [include determining the scope and content of the prior art and] . . . [a]scertaining the differences between the claimed invention and the prior art.” *M.P.E.P.* § 2141(II). In rejecting a claim, “Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art.” *M.P.E.P.* § 2141(III). Here, the Office has not established a *prima facie* case of obviousness because the Office has neither determined the scope and content of the prior art nor ascertained the differences between the claimed invention and the prior art.

Claim 1 calls for a combination including, for example, “[a] diode element delivering to [a] discharge electrode a positive DC high voltage component comprising a superposed AC high voltage component.” The Final Office Action conceded that neither *Grass* nor *Schmidt* teach or suggest the above-quoted element of claim 1. Final Office Action, pp. 4 and 7. The Final Office Action then points to *Goudy*, para. [0200] and asserts that “Goudy teaches a discharge electrode charged with a positive polarity.” Final Office Action, p. 5. However, this is not correct.

Goudy describes a method and apparatus for generating a corona in a fluid material such as gas. *Goudy*, Abstract. In discussing the power supply disclosed in *Goudy*, *Goudy* states “[t]he corona generator 500 includes a reactor portion 501 and a power supply 502 (which may be a high voltage alternating current power supply or a high voltage pulsed DC power supply). The power supply 502 may be a 50 or 60 hertz (or other line frequency electrical energy input.)” (para. [0151], emphasis added) and “another option to minimize the effect of heat is to supply the electrodes of the corona generator with DC pulse power that is at a relatively high frequency compared to line frequency, examples being 40 KHz and higher. Since pulsed D.C. power has a portion of time in which no power is being delivered, the heating effect can be reduced. Using pulse power as the power supply, it is desirable to provide the highest frequency that can be generated in which the Joules per pulse is sufficient to ionize the gas at the appropriate location at the desired time to provide for the discharge and the generating of the corona” (para. [0167], emphasis added).

Accordingly, the power supply 502 of *Goudy* is merely a “pulsed DC source” which generates high frequency DC pulses and has a portion of time in which no power is being delivered. In contrast, the “positive DC voltage component” recited in claim 1 is a continuous DC signal having continuous signal power as further depicted in Figures 1-14. Therefore, even if *Goudy* teaches “a discharge electrode charged with a positive polarity” as alleged by the Final Office Action, which the Applicant does not concede, *Goudy* still fails to teach or suggest “[a] diode element delivering to [a] discharge electrode a positive DC high voltage component comprising a superposed AC high voltage component,” as recited in claim 1.

In view of the mischaracterization of the prior art set forth above, the Office has neither properly determined the scope and content of the prior art nor ascertained the differences between the claimed invention and the prior art. Moreover, no reason has been articulated as to why one of skill in the art would find the claimed combination obvious in view of the prior art. For at least this reason, no *prima facie* case of obviousness has been established. The rejection of claim 1 under 35 U.S.C. §103 as being obvious from *Grass* or *Schmidt* in view of *Goudy* is thus improper and should be withdrawn.

Independent claim 15, while of different scope, recites similar elements as those of claim 1. For at least the reasons discussed above with respect to claim 1, the rejection of claim 15 under 35 U.S.C. §103 as being obvious from *Goudy* in view of *Grass* or *Schmidt* is thus improper and should be withdrawn.

Applicant respectfully traverses the rejections of claims 2-14 and 16-20 under 35 U.S.C. § 103 as being obvious from *Grass* or *Schmidt* in view of *Goudy*, *Duncan*, *Galimberti*, *Masuda*, and *Inomata*. A *prima facie* case of obviousness has not been established.

Claims 2-14 and 16-20 depend from claim 1 or 15 and thus include all of the elements thereof. None of *Duncan*, *Galimberti*, *Masuda*, and *Inomata* teaches or suggests “a diode element connected between [a] high voltage source and [a] discharge electrode, the diode element delivering to the discharge electrode a positive DC high voltage component comprising a superposed AC high voltage component,” as recited in claim 1. The Office asserted that *Duncan*, *Galimberti*, *Masuda*, and *Inomata* teach various elements of dependent claims 2-14 and 16-20. Even if these assertions were correct, which Applicant does not concede, these cited references still fail to teach or suggest the above-quoted elements recited in claims 1 and 15 and included in claims 2-14 and 16-20, dependent from claim 1 or 15. Thus, *Duncan*, *Galimberti*, *Masuda*, and *Inomata* do not compensate for the deficiencies of *Grass*, *Schmidt*, and *Goudy*.

For at least this reason, the rejections of dependent claims 2-14 and 16-20 under 35 U.S.C. § 103 are thus improper and should be withdrawn.

Conclusion

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing pending claims in condition for allowance. Applicant submits that the proposed amendments do not raises new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

Further, Applicant submits that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.


In view of the foregoing, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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